ABSTRACT OF THE DISCLOSURE

There is now a market for kits containing the necessary components for performing protein synthesis reactions using template DNA of the experimenter. One category of existing system for performing protein synthesis reactions is based on an S-30 extract from the bacteria *E. coli*. It is disclosed here that a simple fractionation process can dramatically improve the performance of an S-30 prokaryotic protein synthesis reaction mixture. In one embodiment, the fractionation is a simple freezing and thawing of an S-30 extract combined with a supplemental mix, followed by centrifugation. The resulting fractionated S-30 reaction mixture yields more full-length target protein and less non-full length or non-target protein than possible using prior art S-30 systems.